

Claims

What is claimed is:

- [c1] A directional casing drilling system, comprising:
 - a casing string;
 - a mud motor operatively coupled to the casing string;
 - a rotary steerable system operatively coupled to the mud motor; and
 - a drill bit operatively coupled to the rotary steerable system.
- [c2] The directional casing drilling system of claim 1, further comprising an underreamer disposed below the casing string and above the drill bit, and operatively coupled to the casing string.
- [c3] The directional casing drilling system of claim 1, further comprising a casing shoe cutter disposed at a bottom end of the casing string.
- [c4] The directional casing drilling system of claim 1, wherein the rotary steerable system comprises a push-the-bit system.
- [c5] The directional casing drilling system of claim 1, wherein the rotary steerable system comprises a point-the-bit system.
- [c6] The directional casing drilling system of claim 1, further comprising a measurement while drilling collar disposed above the mud motor and operatively coupled to the casing string.
- [c7] The directional casing drilling system of claim 1, further comprising an articulating casing latch.
- [c8] A directional casing drilling system comprising:
 - a casing string having an integral bend proximate a lower end of the casing string;

a mud motor operatively coupled to the casing string; and
a drill bit operatively coupled to the mud motor.

- [c9] The directional casing drilling system of claim 8, further comprising an underreamer positioned between the drill bit and the casing string and operatively coupled to the casing string.
- [c10] The directional casing drilling system of claim 8, wherein the mud motor is disposed inside the lower end of the casing string.
- [c11] The directional casing drilling system of claim 8, further comprising a measurement-while-drilling device.
- [c12] The directional drilling system of claim 11, wherein the measurement-while-drilling device is positioned above the mud motor and coupled to the casing string.
- [c13] The directional drilling system of claim 8, further comprising an offset centralizer disposed inside the casing string at the lower end of the casing string.
- [c14] A method of directional drilling, comprising:
 - rotating a casing string at a first speed that is slower than an optimum drilling speed;
 - operating a mud motor to rotate a drill bit at a second speed; and
 - changing the direction of the drill bit by operating a rotary steerable system.
- [c15] The method of claim 14, further comprising enlarging a pilot hole drilled by the drill bit using an underreamer coupled to the casing string.
- [c16] The method of claim 14, wherein a bottom end of the casing string comprises a casing shoe cutter and further comprising enlarging a pilot hole drilled by the drill bit using the casing shoe cutter.

- [c17] The method of claim 14, further comprising:
measuring a drill bit azimuth and a drill bit inclination; and
adjusting a drilling direction based on at least one of the drill bit azimuth and the
drill bit inclination.
- [c18] A method of directional casing drilling, comprising:
positioning a casing string so that a bend in a lower section of the casing string
points in a desired azimuthal direction; and
engaging a mud motor to rotate a drill bit.
- [c19] The method of claim 18, further comprising:
measuring a drill bit azimuth and a drill bit inclination; and
repositioning the casing string based on at least one of the drill bit azimuth and the
drill bit inclination.
- [c20] The method of claim 18, further comprising:
measuring a drill bit azimuth and a drill bit inclination;
determining when the drill bit is pointed in a desired direction from at least one of
the drill bit azimuth and the drill bit inclination; and
drilling a straight path by rotating the casing string.